METHOD OF TEST FOR DETERMINING THE COATING AND STRIPPING OF BITUMEN-AGGREGATE MIXTURES

SCOPE

This IM is intended to provide the procedure for determining the ability of cutback or emulsified asphalt to retain a film on aggregate in the presence of water.

APPARATUS

- Container for mixing having rounded corners, such as an 8 or 16 oz. (240 or 480 ml) seamless ointment tin
- Balance with a capacity of at least 200 grams and accurate to 0.1 gram
- Spatula with a stiff blade approximately 1 in. (25 mm) in width and 4 in. (100 mm) in length
- Oven capable of maintaining any temperature between 140°F and 275°F ± 2°F
- (60°C and 135°C ± 1°C)
- Two sieves, one having 3/8 in. (9.5 mm) size mesh and the other No. 4 (4.75 mm) size mesh.
- Glass beaker with 20 oz. (600 ml) capacity

PROCEDURE

A. Materials

1. Standard aggregate. Sioux Falls quartzite, which passes the 3/8 in. (9.5 mm) sieve and is retained on the No. 4 (4.75 mm) sieve. The aggregate is washed to remove fines, dried at 275°F to 300°F (135°C to 149°C) to a constant weight, and stored in airtight containers until required for use.

2. Project aggregate. Aggregate to be used with emulsion for the project for test purposes. The aggregate is graded and prepared in the same manner as standard aggregate in A1.

3. Distilled water

B. Standard Aggregate Coated with Cutback Asphalt

1. Weigh 100 grams of standard aggregate into the mixing container.

2. Add 5.5 ± 0.2 grams of cutback asphalt; preheat when necessary to the temperature specified in Table 1.

3. Mix the cutback and aggregate vigorously with the spatula for 2 minutes. MC-800 and MC-3000 grades may be warmed over a hot plate during the mixing period just sufficiently to permit effective mixing, but not above the temperature limits in Table 1.

4. Oven-cure the coated aggregate in its original container for 2 hours at 140°F (60°C).

5. After curing, remix with the spatula while the mixture cools to room temperature or until the asphaltic residue ceases to drain off the aggregate. Coating of the aggregate must be complete. No bare spots are permissible.

6. Transfer the coated aggregate to the 20 oz. glass beaker. Cover immediately with about 16 oz. of distilled water at room temperature. Allow the coated aggregate to remain immersed in the water for 16 to 18 hours at room temperature.

7. Without disturbing or agitating the coated aggregate, remove any film floating on the water surface. Illuminate the specimen by a flashlight or shaded lamp, positioned to eliminate glare from the surface of the water. By observation through the water from above, visually determine if the percent of retained film on the aggregate surface is above or below 95%. Any thin brownish, translucent areas are considered fully coated.

C. Project Aggregate Coated With Emulsified Asphalt

This procedure is identical to the method of coating standard aggregate with cutback asphalt with the following exceptions:

1. Select a sample of aggregate, which is intended for the project, and prepare it in the same manner as described in B1.

2. Weigh 100 grams of the project aggregate, which has been properly prepared, into the mixing container. Add 8.0 ± 2.0 grams of emulsified asphalt, both at room temperature and without mixing.

3. Place the mixing container, with aggregate and emulsion, in an oven maintained at 275°F (135°C) for 5 minutes.

4. Remove from the oven and stir with the spatula until the aggregate is thoroughly coated.

5. Oven-cure the coated aggregate for 2 hours at a temperature of 275°F (135°C).

6. Complete the test by following B5 through B7.

DOCUMENTATION

1. Report the remaining coated area as “Above 95%” or “Below 95%.”

TABLE 1

Cutback Asphalt Temperature for Mixing

GRADE	TEMPERATURE
MC-30 and MC-70	Room temperature
MC-250	95°F ± 5°F (35°C ± 2.5°C)
MC-800	125°F ± 5°F (52°C ± 2.5°C)
MC-3000	155°F ± 5°F (68°C ± 2.5°C)